

Utah Division of Water Quality  
Salt Lake City, Utah

**WASTELOAD ANALYSIS [WLA]**  
**Addendum: Statement of Basis**  
**SUMMARY**

**Discharging Facility: Central Weber WWTP**

UPDES No: UT-0021911  
Current Flow: 69.50 MGD Design Flow  
Design Flow 69.50 MGD

**Receiving Water: Weber River**

Stream Classification: 2B, 3C, 4  
Stream Flows [cfs]:  
37.0 Summer (July-Sept) 7Q10 Estimate  
55.0 Fall (Oct-Dec) 7Q10 Estimate  
42.0 Winter (Jan-Mar) 7Q10 Estimate  
39.0 Spring (Apr-June) 7Q10 Estimate  
75.0 Average  
Stream TDS Values:  
352.0 Summer (July-Sept) 80th Percentile  
405.0 Fall (Oct-Dec) 80th Percentile  
447.0 Winter (Jan-Mar) 80th Percentile  
323.0 Spring (Apr-June) 80th Percentile

**Effluent Limits:**

Flow, MGD: 69.50 MGD Design Flow  
BOD, mg/l: 25.0 Summer 5.0 Indicator  
Dissolved Oxygen, mg/l: 5.0 Summer 5.0 30 Day Average  
TNH<sub>3</sub>, Chronic, mg/l: 2.4 Summer Varies Function of pH and Temperature  
TDS, mg/l: 1491.8 Summer 1200.0

**WQ Standard:**

**Modeling Parameters:**

Acute River Width: 0.0% Plume Model Used  
Chronic River Width: 82.8% Plume Model Used

**Level 1 Antidegradation Level Completed: Level II Review required**

Date: 12/19/2013

Permit Writer:

WLA by:

WQM Sec. Approval:

TMDL Sec. Approval:



12-19-13

**Utah Division of Water Quality  
Salt Lake City, Utah**

**WASTELOAD ANALYSIS [WLA]  
Addendum: Statement of Basis**

19-Dec-13
4:00 PM

**Facilities:** Central Weber WWTP  
**Discharging to:** Weber River

**UPDES No: UT-0021911**

**I. Introduction**

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary in-stream parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), un-ionized ammonia (as a function of pH and temperature, measured and evaluated in terms of total ammonia), and dissolved oxygen.

Mathematical water quality modeling is employed to determine stream quality response to point source discharges. Models aid in the effort of anticipating stream quality at future effluent flows at critical environmental conditions (e.g., low stream flow, high temperature, high pH, etc).

The numeric criteria in this wasteload analysis may always be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

**II. Receiving Water and Stream Classification**

Weber River:	2B, 3C, 4
Antidegradation Review:	Antidegradation Level II Required

**III. Numeric Stream Standards for Protection of Aquatic Wildlife**

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.00 mg/l (30 Day Average) N/A mg/l (7Day Average) 3.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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**Acute and Chronic Heavy Metals (Dissolved)**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aluminum	87.00 ug/l**	50.418 lbs/day	750.00 ug/l	434.635 lbs/day
Arsenic	190.00 ug/l	110.108 lbs/day	340.00 ug/l	197.035 lbs/day
Cadmium	0.59 ug/l	0.340 lbs/day	6.16 ug/l	3.570 lbs/day
Chromium III	202.51 ug/l	117.357 lbs/day	4236.88 ug/l	2,455.331 lbs/day
Chromium VI	11.00 ug/l	6.375 lbs/day	16.00 ug/l	9.272 lbs/day
Copper	22.75 ug/l	13.183 lbs/day	37.41 ug/l	21.678 lbs/day
Iron			1000.00 ug/l	579.514 lbs/day
Lead	12.01 ug/l	6.957 lbs/day	308.07 ug/l	178.531 lbs/day
Mercury	0.0120 ug/l	0.007 lbs/day	2.40 ug/l	1.391 lbs/day
Nickel	126.08 ug/l	73.063 lbs/day	1133.98 ug/l	657.157 lbs/day
Selenium	4.60 ug/l	2.666 lbs/day	20.00 ug/l	11.590 lbs/day
Silver	N/A ug/l	N/A lbs/day	22.76 ug/l	13.191 lbs/day
Zinc	289.99 ug/l	168.051 lbs/day	289.99 ug/l	168.051 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

Metals Standards Based upon a Hardness of 283.82 mg/l as CaCO<sub>3</sub>

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aldrin			1.500 ug/l	0.869 lbs/day
Chlordane	0.004 ug/l	3.189 lbs/day	1.200 ug/l	0.695 lbs/day
DDT, DDE	0.001 ug/l	0.742 lbs/day	0.550 ug/l	0.319 lbs/day
Dieldrin	0.002 ug/l	1.409 lbs/day	1.250 ug/l	0.724 lbs/day
Endosulfan	0.056 ug/l	41.535 lbs/day	0.110 ug/l	0.064 lbs/day
Endrin	0.002 ug/l	1.706 lbs/day	0.090 ug/l	0.052 lbs/day
Guthion			0.010 ug/l	0.006 lbs/day
Heptachlor	0.004 ug/l	2.818 lbs/day	0.260 ug/l	0.151 lbs/day
Lindane	0.080 ug/l	59.336 lbs/day	1.000 ug/l	0.580 lbs/day
Methoxychlor			0.030 ug/l	0.017 lbs/day
Mirex			0.010 ug/l	0.006 lbs/day
Parathion			0.040 ug/l	0.023 lbs/day
PCB's	0.014 ug/l	10.384 lbs/day	2.000 ug/l	1.159 lbs/day
Pentachlorophenol	13.00 ug/l	9642.088 lbs/day	20.000 ug/l	11.590 lbs/day
Toxephene	0.0002 ug/l	0.148 lbs/day	0.7300 ug/l	0.423 lbs/day

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**IV. Numeric Stream Standards for Protection of Agriculture**

<b>4 Day Average (Chronic) Standard</b>		<b>1 Hour Average (Acute) Standard</b>	
	<b>Concentration</b>	<b>Concentration</b>	<b>Load*</b>
Arsenic		100.0 ug/l	lbs/day
Boron		750.0 ug/l	lbs/day
Cadmium		10.0 ug/l	2.90 lbs/day
Chromium		100.0 ug/l	lbs/day
Copper		200.0 ug/l	lbs/day
Lead		100.0 ug/l	lbs/day
Selenium		50.0 ug/l	lbs/day
TDS, Summer		1200.0 mg/l	347.71 tons/day

**V. Numeric Stream Standards for Protection of Human Health (Class 1C Waters)**

<b>4 Day Average (Chronic) Standard</b>		<b>1 Hour Average (Acute) Standard</b>	
<b>Metals</b>	<b>Concentration</b>	<b>Concentration</b>	<b>Load*</b>
Arsenic		ug/l	lbs/day
Barium		ug/l	lbs/day
Cadmium		ug/l	lbs/day
Chromium		ug/l	lbs/day
Lead		ug/l	lbs/day
Mercury		ug/l	lbs/day
Selenium		ug/l	lbs/day
Silver		ug/l	lbs/day
Fluoride (3)		ug/l	lbs/day
to		ug/l	lbs/day
Nitrates as N		ug/l	lbs/day

**Chlorophenoxy Herbicides**

2,4-D	ug/l	lbs/day
2,4,5-TP	ug/l	lbs/day
Endrin	ug/l	lbs/day
ocyclohexane (Lindane)	ug/l	lbs/day
Methoxychlor	ug/l	lbs/day
Toxaphene	ug/l	lbs/day

**VI. Numeric Stream Standards the Protection of Human Health from Water & Fish Consumption [Toxics]**

	<b>Maximum Conc., ug/l - Acute Standards</b>			
	<b>Class 1C</b>		<b>Class 3A, 3B</b>	
<b>Toxic Organics</b>	<b>[2 Liters/Day for 70 Kg Person over 70 Yr.]</b>		<b>[6.5 g for 70 Kg Person over 70 Yr.]</b>	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	2002.59 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	578.53 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.49 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	52.66 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	3.26 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	15575.68 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	73.43 lbs/day

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1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	6.60 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	31.15 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	8.16 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	1.04 lbs/day
2-Chloroethyl vinyl ether	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0 ug/l	3189.31 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	4.82 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	348.60 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	296.68 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	12608.88 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	1928.42 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	1928.42 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1 ug/l	0.06 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	2.37 lbs/day
1,2-trans-Dichloroethylene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0 ug/l	585.94 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	28.93 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	1260.89 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	1705.91 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	6.75 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5 ug/l	0.40 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	21509.27 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	274.43 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) ether	ug/l	lbs/day	170000.0 ug/l	126088.85 lbs/day
Bis(2-chloroethoxy) methane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600.0 ug/l	1186.72 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0 ug/l	267.01 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	16.32 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	25.22 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	37.08 lbs/day
Hexachlorocyclopentadiene	ug/l	lbs/day	17000.0 ug/l	12608.88 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	445.02 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	1409.23 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0 ug/l	10383.79 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	567.40 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	6.01 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	11.87 lbs/day
N-Nitrosodi-n-propylamine	ug/l	lbs/day	1.4 ug/l	1.04 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	6.08 lbs/day

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Phenol	ug/l	lbs/day	4.6E+06 ug/l	3.41E+06 lbs/day
Bis(2-ethylhexyl)phthalate	ug/l	lbs/day	5.9 ug/l	4.38 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	3856.84 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	8900.39 lbs/day
Di-n-octyl phthalate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	89003.89 lbs/day
Dimethyl phthalate	ug/l	lbs/day	2.9E+06 ug/l	2.15E+06 lbs/day
Benzo(a)anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.02 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0 ug/l	0.02 lbs/day
Benzo(b)fluoranthene (F)	ug/l	lbs/day	0.0 ug/l	0.02 lbs/day
Benzo(k)fluoranthene (F)	ug/l	lbs/day	0.0 ug/l	0.02 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.02 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0 ug/l	0.02 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0 ug/l	0.02 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0 ug/l	8158.69 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	6.60 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	148339.82 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	60.08 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	389.39 lbs/day
				lbs/day
<b>Pesticides</b>				lbs/day
Aldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2.0 ug/l	1.48 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	1.48 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	1.48 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.60 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.60 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 1242)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 1254)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 1221)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 1232)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 1248)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 1260)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 1016)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		

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**Metals**

Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	3189.31 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	163173.80 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.11 lbs/day
Nickel			4600.00 ug/l	3411.82 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	4.67 lbs/day
Zinc				

**There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.**

## **VII. Mathematical Modeling of Stream Quality**

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8

(4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

Coefficients used in the model were based, in part, upon the following references:

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

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(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al.  
Harper Collins Publisher, Inc. 1987, pp. 644.

**VIII. Modeling Information**

The required information for the model may include the following information for both the upstream conditions at low flow and the effluent conditions:

.Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

**Other Conditions**

In addition to the upstream and effluent conditions, the models require a variety of physical and biological coefficients and other technical information. In the process of actually establishing the permit limits for an effluent, values are used based upon the available data, model calibration, literature values, site visits and best professional judgement.

**Model Inputs**

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

**Current Upstream Information**

<b>Stream</b>								
<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>
Summer (Irrig. Season)	37.0	17.7	8.2	0.11	0.10	6.95	0.00	352.0
Fall	55.0	6.7	8.2	0.06	0.10	---	0.00	405.0
Winter	42.0	3.8	8.0	0.12	0.10	---	0.00	405.0
Spring	39.0	11.7	8.1	0.10	0.10	---	0.00	405.0
Dissolved	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb
Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*
Dissolved	Hg	Ni	Se	Ag	Zn	Boron		
Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l		
All Seasons	0.0000	0.53*	1.06*	0.1*	0.053*	10.0		* 1/2 MDL

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**Projected Discharge Information**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	69.50000	NA	400.00	#####
Fall	69.50000	NA		
Winter	69.50000	NA		
Spring	69.50000	NA		

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

**IX. Effluent Limitations**

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort coincide with the environmental conditions expected at low stream flows.

**Effluent Limitation for Flow based upon Water Quality Standards**

In-stream criteria of downstream segments will be met with an effluent flow maximum value as follows:

Season	Daily Average	
Summer	69.500 MGD	107.517 cfs
Fall	69.500 MGD	107.517 cfs
Winter	69.500 MGD	107.517 cfs
Spring	69.500 MGD	107.517 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 69.5 MGD. If the discharger is allowed to have a flow greater than 69.5 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

**Effluent Limitation for Whole Effluent Toxicity (WET) based upon WET Policy**

Effluent Toxicity will not occur in downstream segments if the values below are met.

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	74.4% Effluent	[Chronic]

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**Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD limitation as follows:

Season	Concentration	
Summer	25.0 mg/l as BOD5	14487.8 lbs/day
Fall	25.0 mg/l as BOD5	14487.8 lbs/day
Winter	25.0 mg/l as BOD5	14487.8 lbs/day
Spring	25.0 mg/l as BOD5	14487.8 lbs/day

**Effluent Limitation for Dissolved Oxygen (DO) based upon Water Quality Standards**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent D.O. limitation as follows:

Season	Concentration
Summer	5.00
Fall	5.00
Winter	5.00
Spring	5.00

**Effluent Limitation for Total Ammonia based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	2.4 mg/l as N	1,365.8 lbs/day
	1 Hour Avg. - Acute	7.2 mg/l as N	4,184.4 lbs/day
Fall	4 Day Avg. - Chronic	2.4 mg/l as N	1,381.4 lbs/day
	1 Hour Avg. - Acute	8.7 mg/l as N	5,042.9 lbs/day
Winter	4 Day Avg. - Chronic	3.2 mg/l as N	1,859.2 lbs/day
	1 Hour Avg. - Acute	10.6 mg/l as N	6,146.5 lbs/day
Spring	4 Day Avg. - Chronic	2.6 mg/l as N	1,501.3 lbs/day
	1 Hour Avg. - Acute	9.4 mg/l as N	5,430.8 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

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**Effluent Limitation for Total Residual Chlorine based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Residual Chlorine will be met with an effluent limitation as follows:

Season		Concentration		Load	
Summer	4 Day Avg. - Chronic	0.014	mg/l	8.14	lbs/day
	1 Hour Avg. - Acute	0.026	mg/l	14.78	lbs/day
Fall	4 Day Avg. - Chronic	0.016	mg/l	9.00	lbs/day
	1 Hour Avg. - Acute	0.029	mg/l	16.61	lbs/day
Winter	4 Day Avg. - Chronic	0.014	mg/l	8.38	lbs/day
	1 Hour Avg. - Acute	0.026	mg/l	15.29	lbs/day
Spring	4 Day Avg. - Chronic	0.014	mg/l	8.24	lbs/day
	1 Hour Avg. - Acute	0.026	mg/l	14.98	lbs/day

**Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards**

Season		Concentration		Load	
Summer	Maximum, Acute	1491.8	mg/l	432.27	tons/day
Fall	Maximum, Acute	1473.6	mg/l	426.98	tons/day
Winter	Maximum, Acute	1459.1	mg/l	422.79	tons/day
Spring	4 Day Avg. - Chronic	1501.8	mg/l	435.16	tons/day

Colorado Salinity Forum Limits      Determined by Permitting Section

**Effluent Limitations for Total Recoverable Metals based upon Water Quality Standards**

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 283.82 mg/l):

	4 Day Average		Load	1 Hour Average		Load
	Concentration			Concentration		
Aluminum	N/A		N/A	750.0	ug/l	434.6 lbs/day
Arsenic	243.91	ug/l	91.4 lbs/day	340.0	ug/l	197.0 lbs/day
Cadmium	0.73	ug/l	0.3 lbs/day	6.2	ug/l	3.6 lbs/day
Chromium III	259.99	ug/l	97.4 lbs/day	4,236.9	ug/l	2455.3 lbs/day
Chromium VI	13.00	ug/l	4.9 lbs/day	16.0	ug/l	9.3 lbs/day
Copper	29.00	ug/l	10.9 lbs/day	37.4	ug/l	21.7 lbs/day
Iron	N/A		N/A	1,000.0	ug/l	579.5 lbs/day
Lead	15.20	ug/l	5.7 lbs/day	308.1	ug/l	178.5 lbs/day
Mercury	0.02	ug/l	0.0 lbs/day	2.4	ug/l	1.4 lbs/day
Nickel	161.78	ug/l	60.6 lbs/day	1,134.0	ug/l	657.2 lbs/day
Selenium	5.46	ug/l	2.0 lbs/day	20.0	ug/l	11.6 lbs/day
Silver	N/A	ug/l	N/A lbs/day	22.8	ug/l	13.2 lbs/day

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Zinc	372.59 ug/l	139.6 lbs/day	290.0	ug/l	168.1 lbs/day
Cyanide	6.68 ug/l	2.5 lbs/day	22.0	ug/l	12.7 lbs/day

**Effluent Limitations for Heat/Temperature based upon  
Water Quality Standards**

Summer	20.4 Deg. C.	68.7 Deg. F
Fall	9.7 Deg. C.	49.5 Deg. F
Winter	6.6 Deg. C.	43.8 Deg. F
Spring	14.4 Deg. C.	58.0 Deg. F

**Effluent Limitations for Organics [Pesticides]  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Organics [Pesticides]  
will be met with an effluent limit as follows:

	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration		Load
Aldrin			1.5E+00	ug/l	1.34E+00 lbs/day
Chlordane	4.30E-03 ug/l	2.49E+00 lbs/day	1.2E+00	ug/l	1.08E+00 lbs/day
DDT, DDE	1.00E-03 ug/l	5.80E-01 lbs/day	5.5E-01	ug/l	4.93E-01 lbs/day
Dieldrin	1.90E-03 ug/l	1.10E+00 lbs/day	1.3E+00	ug/l	1.12E+00 lbs/day
Endosulfan	5.60E-02 ug/l	3.25E+01 lbs/day	1.1E-01	ug/l	9.86E-02 lbs/day
Endrin	2.30E-03 ug/l	1.33E+00 lbs/day	9.0E-02	ug/l	8.07E-02 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	8.97E-03 lbs/day
Heptachlor	3.80E-03 ug/l	2.20E+00 lbs/day	2.6E-01	ug/l	2.33E-01 lbs/day
Lindane	8.00E-02 ug/l	4.64E+01 lbs/day	1.0E+00	ug/l	8.97E-01 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	2.69E-02 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	8.97E-03 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	3.59E-02 lbs/day
PCB's	1.40E-02 ug/l	8.11E+00 lbs/day	2.0E+00	ug/l	1.79E+00 lbs/day
Pentachlorophenol	1.30E+01 ug/l	7.53E+03 lbs/day	2.0E+01	ug/l	1.79E+01 lbs/day
Toxephene	2.00E-04 ug/l	1.16E-01 lbs/day	7.3E-01	ug/l	6.54E-01 lbs/day

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**Effluent Targets for Pollution Indicators  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Pollution Indicators will be met with an effluent limit as follows:

	<b>1 Hour Average</b>	
	<b>Concentration</b>	<b>Loading</b>
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	2897.6 lbs/day
Nitrates as N	4.0 mg/l	2318.1 lbs/day
Total Phosphorus as P	0.05 mg/l	29.0 lbs/day
Total Suspended Solids	90.0 mg/l	52156.3 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule]  
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

	<b>Maximum Concentration</b>	
	<b>Concentration</b>	<b>Load</b>
<b>Toxic Organics</b>		
Acenaphthene	3.63E+03 ug/l	2.10E+03 lbs/day
Acrolein	1.05E+03 ug/l	6.08E+02 lbs/day
Acrylonitrile	8.87E-01 ug/l	5.14E-01 lbs/day
Benzene	9.54E+01 ug/l	5.53E+01 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	5.91E+00 ug/l	3.43E+00 lbs/day
Chlorobenzene	2.82E+04 ug/l	1.64E+04 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	1.03E-03 ug/l	6.00E-04 lbs/day
1,2-Dichloroethane	1.33E+02 ug/l	7.71E+01 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.20E+01 ug/l	6.93E+00 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	5.65E+01 ug/l	3.27E+01 lbs/day
1,1,2,2-Tetrachloroethane	1.48E+01 ug/l	8.57E+00 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.88E+00 ug/l	1.09E+00 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	5.78E+03 ug/l	3.35E+03 lbs/day
2,4,6-Trichlorophenol	8.74E+00 ug/l	5.06E+00 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	6.32E+02 ug/l	3.66E+02 lbs/day
2-Chlorophenol	5.38E+02 ug/l	3.12E+02 lbs/day
1,2-Dichlorobenzene	2.29E+04 ug/l	1.32E+04 lbs/day
1,3-Dichlorobenzene	3.49E+03 ug/l	2.03E+03 lbs/day

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1,4-Dichlorobenzene	3.49E+03 ug/l	2.03E+03 lbs/day
3,3'-Dichlorobenzidine	1.03E-01 ug/l	6.00E-02 lbs/day
1,1-Dichloroethylene	4.30E+00 ug/l	2.49E+00 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	1.06E+03 ug/l	6.15E+02 lbs/day
1,2-Dichloropropane	5.24E+01 ug/l	3.04E+01 lbs/day
1,3-Dichloropropylene	2.29E+03 ug/l	1.32E+03 lbs/day
2,4-Dimethylphenol	3.09E+03 ug/l	1.79E+03 lbs/day
2,4-Dinitrotoluene	1.22E+01 ug/l	7.09E+00 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	7.26E-01 ug/l	4.21E-01 lbs/day
Ethylbenzene	3.90E+04 ug/l	2.26E+04 lbs/day
Fluoranthene	4.97E+02 ug/l	2.88E+02 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	2.29E+05 ug/l	1.32E+05 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	2.15E+03 ug/l	1.25E+03 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	4.84E+02 ug/l	2.80E+02 lbs/day
Dichlorobromomethane(HM)	2.96E+01 ug/l	1.71E+01 lbs/day
Chlorodibromomethane (HM)	4.57E+01 ug/l	2.65E+01 lbs/day
Hexachlorocyclopentadiene	2.29E+04 ug/l	1.32E+04 lbs/day
Isophorone	8.06E+02 ug/l	4.67E+02 lbs/day
Naphthalene		
Nitrobenzene	2.55E+03 ug/l	1.48E+03 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	1.88E+04 ug/l	1.09E+04 lbs/day
4,6-Dinitro-o-cresol	1.03E+03 ug/l	5.96E+02 lbs/day
N-Nitrosodimethylamine	1.09E+01 ug/l	6.31E+00 lbs/day
N-Nitrosodiphenylamine	2.15E+01 ug/l	1.25E+01 lbs/day
N-Nitrosodi-n-propylamine	1.88E+00 ug/l	1.09E+00 lbs/day
Pentachlorophenol	1.10E+01 ug/l	6.39E+00 lbs/day
Phenol	6.18E+06 ug/l	3.58E+06 lbs/day
Bis(2-ethylhexyl)phthalate	7.93E+00 ug/l	4.60E+00 lbs/day
Butyl benzyl phthalate	6.99E+03 ug/l	4.05E+03 lbs/day
Di-n-butyl phthalate	1.61E+04 ug/l	9.35E+03 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.61E+05 ug/l	9.35E+04 lbs/day
Dimethyl phthlate	3.90E+06 ug/l	2.26E+06 lbs/day
Benzo(a)anthracene (PAH)	4.17E-02 ug/l	2.41E-02 lbs/day
Benzo(a)pyrene (PAH)	4.17E-02 ug/l	2.41E-02 lbs/day
Benzo(b)fluoranthene (PAH)	4.17E-02 ug/l	2.41E-02 lbs/day
Benzo(k)fluoranthene (PAH)	4.17E-02 ug/l	2.41E-02 lbs/day
Chrysene (PAH)	4.17E-02 ug/l	2.41E-02 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	4.17E-02 ug/l	2.41E-02 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	4.17E-02 ug/l	2.41E-02 lbs/day

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Pyrene (PAH)	1.48E+04 ug/l	8.57E+03 lbs/day
Tetrachloroethylene	1.20E+01 ug/l	6.93E+00 lbs/day
Toluene	2.69E+05 ug/l	1.56E+05 lbs/day
Trichloroethylene	1.09E+02 ug/l	6.31E+01 lbs/day
Vinyl chloride	7.06E+02 ug/l	4.09E+02 lbs/day

**Pesticides**

Aldrin	1.88E-04 ug/l	1.09E-04 lbs/day
Dieldrin	1.88E-04 ug/l	1.09E-04 lbs/day
Chlordane	7.93E-04 ug/l	4.60E-04 lbs/day
4,4'-DDT	7.93E-04 ug/l	4.60E-04 lbs/day
4,4'-DDE	7.93E-04 ug/l	4.60E-04 lbs/day
4,4'-DDD	1.13E-03 ug/l	6.54E-04 lbs/day
alpha-Endosulfan	2.69E+00 ug/l	1.56E+00 lbs/day
beta-Endosulfan	2.69E+00 ug/l	1.56E+00 lbs/day
Endosulfan sulfate	2.69E+00 ug/l	1.56E+00 lbs/day
Endrin	1.09E+00 ug/l	6.31E-01 lbs/day
Endrin aldehyde	1.09E+00 ug/l	6.31E-01 lbs/day
Heptachlor	2.82E-04 ug/l	1.64E-04 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	6.05E-05 ug/l	3.51E-05 lbs/day
PCB-1254 (Arochlor 1254)	6.05E-05 ug/l	3.51E-05 lbs/day
PCB-1221 (Arochlor 1221)	6.05E-05 ug/l	3.51E-05 lbs/day
PCB-1232 (Arochlor 1232)	6.05E-05 ug/l	3.51E-05 lbs/day
PCB-1248 (Arochlor 1248)	6.05E-05 ug/l	3.51E-05 lbs/day
PCB-1260 (Arochlor 1260)	6.05E-05 ug/l	3.51E-05 lbs/day
PCB-1016 (Arochlor 1016)	6.05E-05 ug/l	3.51E-05 lbs/day

**Pesticide**

Toxaphene	1.01E-03 ug/l	5.84E-04 lbs/day
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**Metals**

Antimony	ug/l	lbs/day
Arsenic	ug/l	lbs/day
Asbestos	ug/l	lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	ug/l	lbs/day
Cyanide	ug/l	lbs/day
Lead		
Mercury	ug/l	lbs/day
Nickel	ug/l	lbs/day
Selenium		
Silver		
Thallium	ug/l	lbs/day
Zinc		

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<b>Dioxin</b>		
Dioxin (2,3,7,8-TCDD)	1.88E-08 ug/l	1.09E-08 lbs/day

**Metals Effluent Limitations for Protection of All Beneficial Uses  
Based upon Water Quality Standards and Toxics Rule**

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		750.0				750.0	N/A
Antimony				5779.8		5779.8	
Arsenic	134.4	340.0			0.0	134.4	243.9
Barium						0.0	
Beryllium						0.0	
Cadmium	13.4	6.2			0.0	6.2	0.7
Chromium (III)		4236.9			0.0	4236.9	260.0
Chromium (VI)	134.1	16.0			0.0	16.00	13.00
Copper	268.6	37.4				37.4	29.0
Cyanide		22.0	295709.3			22.0	6.7
Iron		1000.0				1000.0	
Lead	134.1	308.1			0.0	134.1	15.2
Mercury		2.40		0.20	0.0	0.20	0.015
Nickel		1134.0		6183.0		1134.0	161.8
Selenium	66.7	20.0			0.0	20.0	5.5
Silver		22.8			0.0	22.8	
Thallium				8.5		8.5	
Zinc		290.0				290.0	372.6
Boron	1008.1					1008.1	

**Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]**

[If Acute is more stringent than Chronic, then the Chronic takes on the Acute value.]

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	750.0	N/A	
Antimony	5779.77		
Arsenic	134.4	243.9	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	6.2	0.7	
Chromium (III)	4236.9	260	
Chromium (VI)	16.0	13.0	
Copper	37.4	29.0	

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Cyanide	22.0	6.7	
Iron	1000.0		
Lead	134.1	15.2	
Mercury	0.202	0.015	
Nickel	1134.0	162	
Selenium	20.0	5.5	
Silver	22.8	N/A	
Thallium	8.5		
Zinc	290.0	372.6	Acute Controls
Boron	1008.10		

Other Effluent Limitations are based upon R317-1.

E. coli 126.0 organisms per 100 ml

#### **X. Antidegradation Considerations**

The Utah Antidegradation Policy allows for degradation of existing quality where it is determined that such lowering of water quality is necessary to accommodate important economic or social development in the area in which the waters are protected [R317-2-3]. It has been determined that certain chemical parameters introduced by this discharge will cause an increase of the concentration of said parameters in the receiving waters. Under no conditions will the increase in concentration be allowed to interfere with existing instream water uses.

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an

**Antidegradation Review is Required.**

#### **XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value.

#### **XII. Summary Comments**

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important downstream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

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**XIII. Notice of UPDES Requirement**

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information. Permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations provided that the values in this wasteload analysis [TMDL] are not compromised. See special provisions in Utah Water Quality Standards for adjustments in the Total Dissolved Solids values based upon background concentration.

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801-538-6052  
File Name: CWSID\_WLA\_12-19-13.xls

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**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 1.800	REAER. Coeff. (Ka)20 (Ka)/day 20.537	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 19.447	NBOD Coeff. (Kn)20 1/day 0.600	NBOD Coeff. (Kn)T 1/day 0.503
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 3.599	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(Cl)20 1/day 32.000	TRC K(Cl)(T) 1/day 27.986
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.865						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(Cl) TRC {theta} 1.1	S Benthic {theta} 1.1

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Statement of Basis  
ADDENDUM  
Wasteload Analysis and Antidegradation Level I Review**

**Date:** December 26, 2013

**Prepared by:** Dave Wham  
UPDES Section

**Facility:** Central Weber Sewer Improvement District  
UPDES No. UT0021911

**Receiving water:** Weber River (2B, 3C, 3D 4) and Warren Canal (2B, 3E, 4)

This addendum summarizes the wasteload analysis that was performed to determine water quality based effluent limits (WQBEL) for this discharge. Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses (UAC R317-2-8). Projected concentrations are compared to numeric water quality standards to determine acceptability. The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

Discharge

Outfall 001: Weber River

Outfall 002: Warren Canal

The mean monthly design discharge for the facility is 69.5 MGD.

Five discharge scenarios were evaluated for this facility:

**Table 1. Discharge Scenarios**

Scenario	WWTP Flow to Weber River 001	WWTP Flow to Warren Canal	Warren Canal Flow to Weber River 002
1(a)	0	69.5	69.5
1(b)	0	69.5	25.0
2	69.5	0	0
3(a)	25	44.5	0
3(b)	25	44.5	44.5

Receiving Water

The receiving water for Outfall 001 is the Weber River. As per UAC R317-2-13.4.a, the designated beneficial uses for Weber River, from Great Salt Lake to Slaterville diversion are 2B, 3C, 3D, 4.

- Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary

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*contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*

- *Class 3C -- Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.*
- *Class 3D -- Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

The receiving water for the 002 discharge is the Warren Canal then to the Weber River. The designated uses for the Warren Canal are 2B, 3E and 4.

- *Class 3B -- Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.*
- *Class 3E -- Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

The critical low flow for the wasteload analysis is the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). The 7Q10 was calculated on a seasonal basis from daily flow data obtained from USGS site #10141000; Weber River near Plain City (1993-2013). Results are as follows: (Table 1).

**Table 2: Seasonal critical low flow**

Season	Flow (cfs)
Summer	37
Fall	55
Winter	42
Spring	39

**TMDL**

This section of the Weber River is impaired for benthic-macroinvertebrate/bioassessment on the 2010 303(d) list. The source of impairment is listed as unknown.

**Parameters of Concern**

The potential parameters of concern identified for the discharge/receiving water were total ammonia, copper, mercury and total residual chlorine as determined in consultation with the UPDES Permit Writer.

**Water Quality Modeling**

An Excel spreadsheet mass balance model was developed specifically for this WLA by the

**Utah Division of Water Quality  
Wasteload Analysis  
Central Weber Sewer Improvement District  
UPDES No. UT0021911**

Division of Water Quality. The model was populated with water chemistry data obtained from Station #4920120, Weber River above Central Weber WWTP. A simple mixing analysis was conducted for conservative constituents such as dissolved metals. Ammonia and total residual chlorine effluent limits were calculated using appropriate decay coefficients where appropriate. Water quality based effluent limitations determined through this analysis are summarized in Appendix A. This wasteload model, along with accompanying data and assumptions, is available for review on request.

**Antidegradation Level I Review**

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water. Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

A Level II Antidegradation Review (ADR) is required for this discharge since the design capacity of the facility has increased from the previous permit cycle.